

## Module - 2 : Logical Ability (Reasoning) (Accenture) \*\*

chapter - 1 : Coding & Decoding \*

chapter - 2 : Letter & Number concept \*

1. series \*

2. classification

3. Analogy.

chapter - 3 : calender, clock <sup>(TCS++)</sup>

only for

\* (Accenture)

5. pseudo code

6. N/W & cloud

chapter - 4 : Direction test, Number, Ranking, Time Sequence test

chapter - 5 : Data arrangements (on puzzle test) \*

\*\* 1. classification \*

4. Sequential order of things.

2. seating arrangement \*

5. Family based concept \*

3. comparison test

6. Cube, cuboid and dices.

chapter - 6 : logic

\*\*

1. logical deductions \*

2. logical connectives

3. logical vein diagrams.

chapter - 7 : Data Sufficiency \*

\*\*

chapter - 8 : Decision Making \*

chapter - 9 : Statements & conclusions, statements & arguments, statements & assumptions. (only for Govt exams)

chapter - 10 : Non-Verbal Reasoning \*

1. figure series \*

4. counting figures.

2. figure classification \*

3. figure analogy \*

# CALENDAR

- 1) Ordinary year: It contains 365 days & February month contains 28 days.
  - 2) leap year: \* It contains 366 days & February month contains 29 days.
    - \* A Normal year which is divisible by 4 that year is called leap year.  
Ex: 1972, 1976, 1980-----
    - \* A century which is divisible by 400 that century is called leap century/leap year.  
Ex: 400, 800, 1200, -----
  - 3) odd day: A week contains 7 days, more than 7 days is called odd Day.
- NOTE :-
- 1) Odd days are always less than 7.
  - 2) Ordinary year contains 52 weeks + 1 odd day.
  - 3) A leap year contains 52 weeks + 2 odd days.
  - \* 4) Divisible by 4 means consider only quotient i.e., no. of leap years.
  - \* 5) Divisible by 7 means consider only remainder i.e., no. of odd days.

## Day code

SUN - 0	WED - 3	SAT - 6.
MON - 1	THURS - 4	
TUE - 2	FRI - 5	.

## Month code

JAN - 0	MAY - 1	SEP - 5
FEB - 3	JUNE - 4	OCT - 0
MAR - 3	JULY - 6	NOV - 3
APR - 6	AUG - 2	DEC - 5.

## Century code

1600 - 1699 = 6
1700 - 1799 = 4
1800 - 1899 = 2
1900 - 1999 = 0
2000 - 2099 = 6
2100 - 2199 = 4

## NOTE:-\*\*

Ordinary year: Jan code = 0, Feb code = 3

leap year: Jan code = -1, Feb code = 2 (Mar - Dec : either leap yr or ordinary year month codes are same)

Ex:

1) Find the day of the week on 18<sup>th</sup> July 2024 is \_\_\_\_\_

$$\begin{aligned}
 18 + 24 + \frac{24}{4} + MC + CC &= 60 \quad \text{1)} 60(8) \\
 &\downarrow \quad \downarrow \quad \downarrow \quad \downarrow \\
 \text{Year code} &= 4 \quad \text{Month code} = 6 \quad \text{Century code} = 4 \\
 4 & \quad 6 \quad 4
 \end{aligned}$$

We need to check  
Jan & Feb for  
every year for  
MC

2) Find the day of the week on 10<sup>th</sup> Jan 2012 is \_\_\_\_\_

$$\begin{aligned}
 10 + 12 + \frac{12}{4} + MC + CC &= 30 \quad \text{1)} 30(4) \\
 &\downarrow \quad \downarrow \quad \downarrow \quad \downarrow \\
 &= 2 \quad \text{(Tuesday)} \quad \text{2)
 \end{aligned}$$

## LOGIC

- 1) logical deductions (\*\* Imp to placements & M) (Accenture, TCS, Oracle) (about 5M).
- 2) logical connectives (\*\* Imp to Infosys)
- 3) logical Venn diagrams. (\*\* Imp to GOVT exams)

### logical deductions (or) syllogism:-

#### Concept :-

1) statement : A sentence which can be either true or false but cannot both is called Stmt.

2) conclusion : Result of the given Stmt is called conclusion.

3) All A are B :



(or)

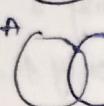
$$A = \{a, b, c\}$$

$$B = \{a, b, c, d\}$$

$$A \rightarrow B \Rightarrow \text{All}$$

$$B \rightarrow A \Rightarrow \text{some}$$

4) Some A are B :



(or)

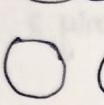
$$A = \{a, b, c\}$$

$$B = \{c, d, e\}$$

$$P \rightarrow Q$$

$$\sim Q \rightarrow \sim P$$

5) No A is B :



(or)

$$A = \{a, b, c\}$$

$$B = \{d, e, f\}$$

1) Statements : 1. All pens are pencils.

2. All pencils are papers.

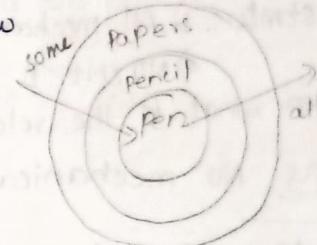
Conclusion : 1. No pen is a paper.

2. All papers are pencils.

3. Some papers are pencils.

4. All pens are papers.

- a) only 1 & 2 follow  
 b) only 2 & 3  
 c) only 3 & 4  
 d) only 1 & 4



2) Stmts : 1. All politicians are honest.

2. Some politicians are fair.

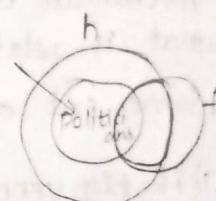
Conclusions : 1. Some honest are politician.

2. No honest is a fair.

3. All fair are honest.

4. Some honest are fair.

- a) only 1 & 2  
 b) only 1  
 c) only 1 & 3  
 d) only 1 & 4



#### Venn diagram order:

\* 1<sup>st</sup> priority - NO type of Stmt of Venn diagram.

2<sup>nd</sup> " - Some type of Stmt of "

3<sup>rd</sup> " - All " "

3) Stmts : 1. All buses are cars.

2. Some cars are aeroplanes.

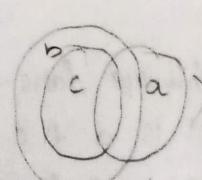
Conclusions : 1. All cars are buses.

2. No bus is an aeroplane.

3. All aeroplanes are buses.

4. Some buses may be aeroplanes.

- a) only 1  
 b) only 2  
 c) only 3  
 d) only 4



NOTE : If there bus & aeroplane relation not given then answer exists some buses may be aeroplanes i.e., either no bus is aeroplane (or) some aeroplanes are buses.

2. Individual no bus is a aeroplane is not a correct conclusion.

white

4) stmts : 1. All ~~is~~<sup>are</sup> red

2. some red are blue

conclusions: 1. No white is red

2. No white is blue

3. some blue are white

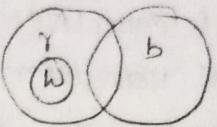
4. All red are white

a) only 2

b) only 3

c) only either 2 or 3

d) Neither 2 nor 3.



either, or = 1 some,

1 None

otherwise  
neither, nor

5) stmts: 1. Some houses are offices.

2. some offices are colleges

conclusions: 1. No house is college

2. some offices are houses

3. some colleges are houses

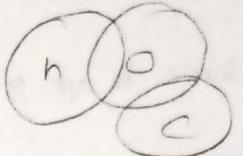
4. All offices are colleges.

a) only 1 & 2

b) either 1 or 2, only 3

c) either 1 or 3, only 4

d) either 1 or 3, only 2.



Here

6) stmts: 1) All mechanical are srit clg.

2) No srit is tech mahendra

Then what is the relation b/w mechanical & Tech-M?

All

Ans. No mechanical is in Tech-M.

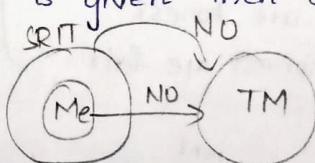
\* 1. All mechanical are srit clg.

2. No mechanical is Tech-M.

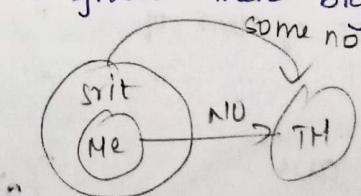
Then what is relation b/w srit & Tech-M?

Ans: Some srit are not Tech-M.

NOTE: 1) If big venn diagram no relation is given then small venn diagram also exists no relation.



2) If small venn diagram no relation is given then big venn diagram exist some not relation.



7) 1. All lights are fans.

2. No light is a Ac

conclusions: 1. All fans are lights

2. some lights are Ac's

3. some fans are not Ac's

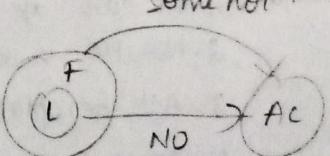
4. All Ac's are lights

a) only 1

b) only 2

c) only 3

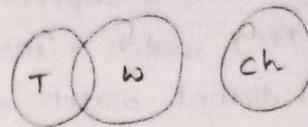
d) only 4



8) Stmt's : 1. Some tables are windows.  
2. No window is a chair.

conclusions : 1. All windows are tables  
2. Some tables are not chairs.  
3. No chair is a table  
4. All tables are chairs.

- a) only 1  
b) only 2  
c) only 3  
d) only 4



NOTE :- Here Table and chair relation not given, then answer exists "some tables are not chairs".

2. But no table is a chair is not a correct conclusion.

### Conclusion of the topic :-

- i) if All + Some, Some + Some if <sup>relation</sup> not given then answer exists "may be" i.e.. either or.
- ii) If All + NO, Some + NO is ~~no~~ if relation not given then answer exists "some not" relation.

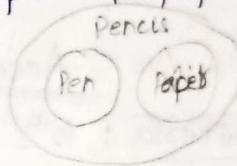
### TYPE - 2

Where 3rd stmt is a conclusion from the preceding 2 stmts

i) a. All pens are pencils, all papers are pencils, then some pens are papers.

b.  
g.

Ans: All pens are pencils, all papers are pencils, some pens may be papers.



### TYPE - 3 :

A: All pens are pencils

B: All pens are books

!

F:

- a) ADE      b) BDF      c) - - -      d) - - -

using A & D stmts draw venn diagram & next check E stmt then it is correct  
ans is correct otherwise NO.

### Logical connectives :-

1. If p, then q  $\Rightarrow p \rightarrow q$ ,  $\sim q \rightarrow \sim p$

2. All, when, whenever p, q  $\Rightarrow p \rightarrow q$ ,  $\sim q \rightarrow \sim p$ .

3. p and q  $\Rightarrow p \rightarrow q$ ,  $\sim p \rightarrow \sim q$

4. either p or q  $\Rightarrow \sim p \rightarrow q$ ,  $\sim q \rightarrow p$

5. unless p, q  $\Rightarrow \sim p \rightarrow q$ ,  $\sim q \rightarrow p$ .

6. p otherwise q  $\Rightarrow \sim p \rightarrow q$ ,  $\sim q \rightarrow p$ .

7. only if, if and only if  $\Rightarrow q \rightarrow p$ ,  $\sim p \rightarrow \sim q$ .  
p, q

- i) If movie is superhit, then i watch it.
- a) If I watch a movie then movie was not super hit.
- b) I did not watch a movie then movie not super hit.
- c) If movie is super hit then i do not watch it.
- d) None.
- $\Rightarrow P \rightarrow q$
- $P = \text{watch a movie}$
- $q = \text{superhit}$
- $\Rightarrow \neg q \rightarrow \neg P$
- $\neg P$
- $\neg q$
- 2) All that glitters are gold.
- a)  $a \cdot b (P \rightarrow \neg P)$  c)  $\neg b (q \rightarrow \neg P)$
- b)  $a \cdot c (P \rightarrow q)$  d) Both a & b
- stmt - a  $\Rightarrow x$  is glitter, stmt b  $\Rightarrow x$  is not glitter.
- stmt - c  $\Rightarrow x$  is gold      stmt d  $\Rightarrow x$  is not glitter.
- $\downarrow$
- $\neg q$

### logical venn Diagrams:-

- 1) a)  b)  c)  d) None.
- (i) sun, star, moon  $\rightarrow$  (c)
- (ii) thief, criminal, judge  $\rightarrow$  (c)
- (iii) seconds, minutes, hours  $\rightarrow$  (b)
- (iv) ~~men, mothers~~ Humanbeing, women mothers  $\downarrow$   
(d)

### Accenture Test pattern

Eligible Criteria: 10<sup>th</sup> - 60%, Inter - 60%, B-Tech (3-2) : upto 60% & above.

Package: 4.5 LPA, 6.5 (LPA)

- Rounds:-
- 1) written test } Test venue: college.  
 2) coding test  
 3) communication test (SVAR) } Virtual mode.  
 4) TR & HR

### Written test pattern:

Sec - A : General English (17 Ques) (17 min)

- sentence completion, sentence improvement, correction of sentences.
- Theme detection, inferences.
- comprehensive passages.
- vocabulary (syn & anton)
- Functional grammar (Articles, prepos., Tenses, Act & pass voice, direct & indirect speech, confusable words, subject verb agreement)

Sec - B : critical Reasoning & pblms. (18 Ques) (18 min)

- coding, decoding
- letter & no. concept
- logical deductions
- puzzle test
- Decision making
- Flow chart
- data sufficiency
- data interpretation
- Non-Verbal reasoning (diag based)
- Direction test & Ranking test.

Sec-C: Abstract Reasoning (15 Ques) (Topics above as Reasoning)

Sec-D: common Appl's and MS-office (12 M) (12 Ques)

- Operating system (def)
- Internet concepts
- H/w & S/w
- MS-word
- MS-excel
- MS-powerpoint

Sec-E: pseudo code (20 Ques) (20 Min) [C, DS, Python]

Sec-F: Network security & Problem cloud computing (10 Ques).

Round - 2: Coding Test (2 Ques) (45 min) (1 ques. mandatory)

Technical interview subjects:-

- C language
- Java
- DS
- DBMS (SQL queries)
- OOPS concepts

Regular  $\leftarrow 180^\circ$   
Reflex  $\rightarrow 180^\circ$   
Supplementary  $\rightarrow = 180^\circ$

## CLOCK

NOTE:-

1) The total angle in clock is  $360^\circ$ .

2)  $12 \text{ hrs} = 360^\circ$ ,  $1 \text{ hr} = \frac{360}{12} = 30^\circ$ \*

3)  $60 \text{ min} = 360^\circ$ ,  $1 \text{ min} = \frac{360}{60} = 6^\circ$ \*

4) 'low' indicate before i.e., '-' operator

5) 'past' indicate after i.e., '+' operator.

Ex: 1) 10 min low at 1 = 12:50.

2) 10 min past at 1 = 1:10.

sec is negligible

Example:-

Type-① (Imp to placements)

1) Find the angle of a clock at 8:20 AM.

$$\theta = \left| \frac{11}{2} m - 30H \right|$$

Where  $m=20, H=8$ .

$$\Rightarrow \left| \frac{11}{2} \times 20 - 30(8) \right|$$
$$\Rightarrow |110 - 240| = \underline{130^\circ}$$

8:20

$$\Rightarrow \text{Min : } 20 \times 6 = 120^\circ \rightarrow ①$$

$$\text{Hour : } 8 + \frac{20}{60} = \frac{25}{3} \text{ hrs} \times \frac{10}{38} \rightarrow 250^\circ \rightarrow ②$$

$$\Rightarrow ② - ① = 250 - 120 = 130^\circ$$

NOTE: i) AM angle = PM angle is same.

\*2) 24 hrs format convert into a 12 hrs format.

Ex: 21:10  $\Rightarrow$  9:10  $\Rightarrow$  Here  $H=9, M=10$ .

3) Regular angle =  $\theta$  i.e.,  $< 180^\circ$ , (ii) Reflexive angle =  $360^\circ - \theta$  i.e.,  $> 180^\circ$ .

2) What is the angle of a clock at 10 mins past 5?

$$\text{time} = 5:10 \Rightarrow \theta = \left| \frac{11}{2} (10) - 30(5) \right| \Rightarrow |55 - 150| = \underline{95^\circ}$$

3) What is the angle of a clock at 14:20?

$$\text{time} = 14:20 \Rightarrow \theta = \left| \frac{11}{2} (20) - 30(14) \right| \Rightarrow 110 - \underline{160} = \underline{50^\circ}$$

4) What is the reflexive angle of a clock at 10:10?

$$\theta = \left| \frac{11}{12}(10) - 30(10) \right| = \left| 55 - 300 \right| = \frac{245}{11}^{\circ} \Rightarrow 360^{\circ} - 245^{\circ}$$

$\theta = 115^{\circ}$   
reflexive.

$$\begin{array}{r} 360 \\ 245 \\ \hline 115 \end{array}$$

bcz Reflexive is  $> 180^{\circ}$ .

Type-2: (Imp to date).

i) At what time b/w 4 and 5 o'clock will the hands of a clock be at right angle?

$$\boxed{\text{Time} = \frac{2}{11} [4 \times 30 \pm \theta]} \quad \text{Where } H = \text{First hour}, \theta = \text{angle.}$$

Here  $H = 4, \theta = 90^{\circ}$  (right angle)

$$\text{ii) } 4:20 (38)$$

$$\begin{array}{r} 11 \\ 60 \\ \hline 55 \\ 33 \\ \hline 88 \\ 5 \end{array}$$

$$\text{Time} = \frac{2}{11} [4 \times 30 \pm 90]$$

$$\text{case-1: Time} = \frac{2}{11} [120 + 90]$$

$$= \frac{2}{11} [210] = \frac{420}{11} \\ = 38 \frac{2}{11} \text{ past 4.}$$

$$\text{case-2: Time} = \frac{2}{11} [120 - 90]$$

For every one hr  
2 right angles are  
formed.  $= \frac{60}{11}$   
 $= 5 \frac{5}{11} \text{ past 4.}$

$$\text{②}$$

2) At what time b/w 2 & 3 o'clock will the hands of a clock be together?

3) At what time b/w 8 & 9 o'clock will the hands of a clock lie in straight line but in opp direction?

4) At what time b/w 5 & 6 o'clock will the hands of a clock 3 mins apart?

5) At what time b/w 5:30 & 6 o'clock will the hands of a clock be at right angle?

NOTE: 1. Type-2 ques always consider only two solns. together/coincide.

2. straight line in opp direction then angle =  $180^{\circ}$ .

3. straight line in same direction then angle =  $0^{\circ}$ .

4. Right angle =  $90^{\circ}$ .

5. 3 mins angle =  $18^{\circ}$  ( $3 \times 6^{\circ}$ )

6. ~~last/edge~~ = ~~2010~~ (2886/290)

It is negligible bcz  $76 \text{ min}$   
as  $9:16$ . (max min = 60)

$$2) \text{Time} = \frac{2}{11} [2 \times 30 \pm 0]$$

$$\text{case-1: } \frac{2}{11} [60 + 0] = \frac{120}{11} \\ = 10 \frac{10 \text{ min}}{11} \text{ past 2.}$$

$$\text{c-2: } \frac{2}{11} [60 - 0] = 10 \frac{10 \text{ min}}{11} \text{ past 2.}$$

$$3) \text{Time} = \frac{2}{11} [8 \times 30 \pm 180]$$

$$3) \text{Time} = \frac{2}{11} [8 \times 30 \pm 180]$$

$$\text{c-1: } \frac{2}{11} [240 + 180] = \frac{2}{11} [420]$$

$$= \frac{840}{11} = 76 \frac{4 \text{ min}}{11} \text{ past 8.}$$

$$\text{c-2: } \frac{2}{11} [240 - 180] = \frac{2}{11} [60]$$

$$= \frac{120}{11} = 10 \frac{10 \text{ min}}{11} \text{ past 8.}$$

$$4) \text{Time} = \frac{2}{11} [5 \times 30 \pm 18]$$

$$\text{c-1: } \frac{2}{11} [150 + 18] = \frac{2}{11} [168]$$

$$= \frac{336}{11} = 30 \frac{6 \text{ min}}{11} \text{ past 5.}$$

$$\text{c-2: } \frac{2}{11} [150 - 18] = \frac{2}{11} [132]$$

$$= \frac{264}{11} = 24 \text{ min past 5.}$$

$$\text{c-1: } \frac{2}{11} [150 + 90] = \frac{2}{11} [240]$$

$$= \frac{480}{11} = 43 \frac{7 \text{ min}}{11} \text{ past 5.}$$

$$\text{c-2: } \frac{2}{11} [150 - 90] = \frac{2}{11} [60]$$

$$= \frac{120}{11} = 10 \frac{10 \text{ min}}{11} \text{ past 5.}$$

$\rightarrow$  It below 5:30.  
so,  $-0$  is negligible.

### Type-3: [Properties of a clock] [TCS]

1) How many times in a day, the hands of a clock be together?

- a) 12      b) 11      c) 24      d) 22

B/c, the hands of a clock be together (or coincide), 11 times in 12 hrs. then 22 times in 24 hrs.

∴ In a day - 22 times.

2) How many times in a day, the hands of a clock are at right angle?

- a) 22      b) 44      c) 24      d) 48

The hands of a clock are at right angle 22 times in 12 hrs. then 44 times in 24 hrs. in a day.  
(missing  $\Delta^{\circ}$  -  $180^{\circ} C$ ,  $243^{\circ}$  clock)

case-2 not possible

3) How many times in a day the hands of a clock, are in straight line but in opp direction?

- a) 11      b) 22      c) 24      d) 44

The hands of a clock are in straight line either opp direction or same direction, 11 times in 12 hrs, then 22 times in 24 hrs..

4) How many times in a day the hands of a clock are in straight line?

- a) 22      b) 44      c) 24      d) 48

straight line = opp + same  $\rightarrow 22 + 22 = 44$  times

5) A clock is started at noon by 30 min past 5, the hour hand has turned through -?

- a)  $130^{\circ}$       b)  $155^{\circ}$       c)  $160^{\circ}$       d) None.

$$12 - 5:30 \Rightarrow \text{start time} = 5 + \frac{30}{60} = 5 + \frac{1}{2} = 5\frac{1}{2} \text{ hrs.}$$

starting time = 12:00 pm

ending time = 5:30 pm

$\therefore$  Total hrs = 5 hrs 30 min

for  $12 - 5:10 \Rightarrow \text{start time} = 5 + \frac{10}{60} = 5 + \frac{1}{6} = 5\frac{1}{6} \text{ hrs.}$

K.E., 8

[ $1 \text{ hr} = 30^{\circ}$ ]

### CODING & DECODING. (SM) to (DN).

- 1) letter series      2) letter classification      3) letter analogy.

Method :

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
V	W	X	Y	Z																LOVE
1	2	3	4	5	6	7	8	9	10	11	12	13								
A	B	C	D	E	F	G	H	I	J	K	L	M								
26	25	24	23	22	21	20	19	18	17	16	15	14								
2	Y	X	Z	W	V	U	T	S	R	Q	P	N								

Examples:-

TYPE-1:-

(OPP)

If TABLE codes as G27OV then PROBLEM written in that code. KJLYOVN

Q) odd man out

- a) UN      b) HR      c) GT      d) LD.

### TYPE-2:-

1) If  $D=4$ , COVER = 63, then BASIS is 57 ?

2) TOM = 3, then DICK =    ?

3) BOMBAY = 24; then KARNATAKA = 45 ?

1)  $C+O+V+E+R = 63$   
 $3+15+22+5+18 = 63$   
 $63 = 63$

so,  $B+A+S+T+K+R = 2+1+19+9+19$   
 $= 50$

2)  $T+O+M = 3$   
 $20+15+13 = 48 \Rightarrow 4+8 = 12 \Rightarrow 142 = 3$   
so, DICK  $\Rightarrow 4+9+3+11 = 27 \Rightarrow 2+7 = 9$

4) add one out

- a) P(37)   b) N(17)   c) R(66)   d) Z(40)

$P = 16 \Rightarrow 1^2 + 6^2 \Rightarrow 1 + 36 = 37$ ,  $N = 14 = 1^2 + 4^2 = 17$ ,  $R = 18 = 1^2 + 8^2 = 65$

$Z = 26 \Rightarrow 2^2 + 6^2 = 40$ .

### TYPE-3:-

1) If AKBAR is coded as GPFDT then SWING is YBMOI

2) If FASHION is coded as FOIHSAN then PROBLEM is PELBORM

3) BOMBAY is MYMAMY then TAMILNADU is MNUMNUMNU

4) COMPUTER is RFUVQNPC then MEDICINE is EJDJEFM

5) BURNER is CASOIS then ALIGNMENT is EMOHONIOU

6) FLOWER is PMGISFX then BOMBAY is NPCZBC.

7) CLASS is LCASS then SWING is WSI&GN

8) MINIATURE is 139149120115 then PRIVACY is 7994137.

9) RED is 6720 then CAMEL is 1471535

10) BEAUTY is YVZFGIB then CHARM is        [letter opp]

11) STABILITY is 769549205 then RESTICATE is 139906920 then E code is         

12) FRANK is 67542 then MUFFET is 169608 then F code is 6

AEIOU repetition  
E L O W E R  
P M G S F X  
B O M B A Y  
N P C Z B C

### TYPE-4:-

1) If BLUE is called WHITE, WHITE is called RED, RED is called GREEN, GREEN is called PINK, then what is the color of MILK color?

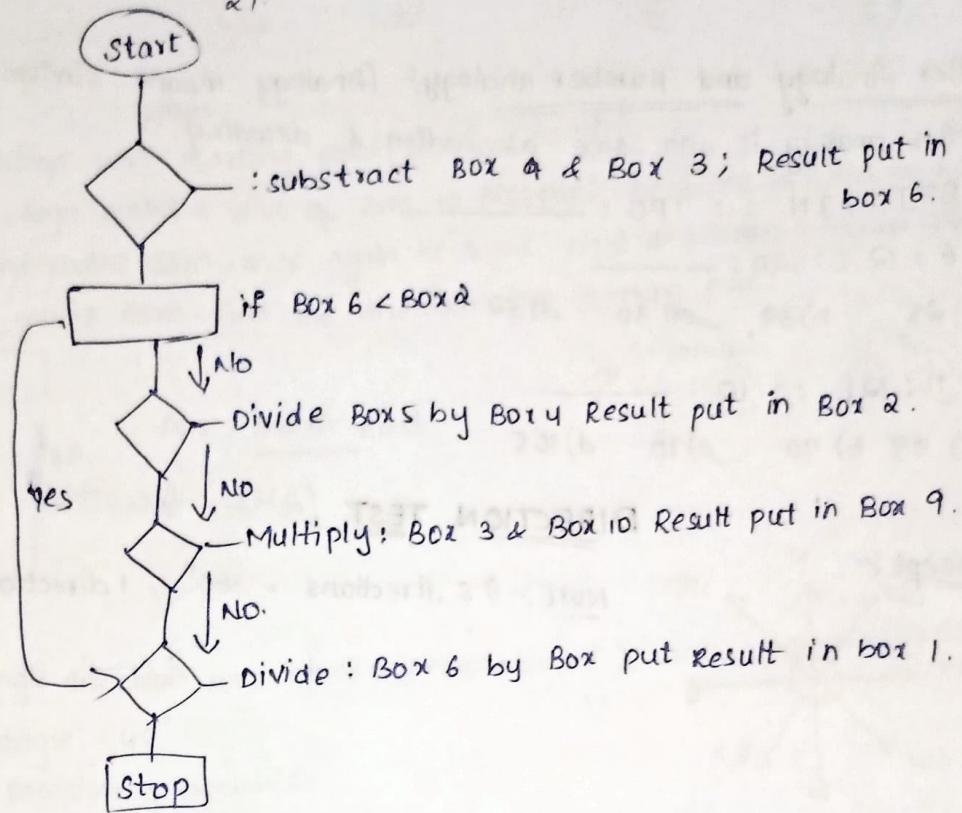
MILK color = WHITE, But WHITE is RED, then MILK color = RED.

2) If 258 means "Tea and coffee", 817 means "coffee is sweet", 573 means "Tea is hot" then which digit is used for "AND"?

Tea is 5, coffee is 8, And = 2.

# FLOW CHART (only for Accenture (am))

Box NO :	1	2	3	4	5	6	7	8	9	10
Values :	3	5	32	20	36	4	32	8	30	9



1) At the end of the flowchart Box 1 value is :

- a) 1   b) 2   c) 5   d) 27   e) 9.

2) Is box 6 > box 8 ?

- a) yes   b) NO.

## LETTER CONCEPT (Accenture(am))

\* It is classified into 3 modules : 1) letter series 2) letter classification  
3) letter analogy .

Letter Series (Sequence of letters is called letter series)

1) Z, S, W, O, T, K, Q, G  
<sub>26 19 23 15 20 11 17 7</sub> → 4.      5) 98, 73, 22, 5

2) A, B, C, D, E, F, G, H, I, J, K, L, M, N, P, Q, R, S, T, U, V, W, X, Y, Z  
<sub>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26</sub> → 4.      6) 1, 11, 21, 1211, 111221.

3) BG, DJ, GF, GN, KS  
<sub>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26</sub> → 4.      7) one 1 → 11 [pronunciation]

4) J, F, M, A, M, J, J, T  
<sub>1 2 3 4 5 6 7 8</sub> → 4.      8) two ones → 21  
Jan Feb Mar Apr May June July      one two one one → 1211  
one one one two one one → 111211.

Letter classification And Number classification!- (class" means odd man out)

- 1) a) student   b) professor   c) reader   d) principal.

- 2) a) 30      b) 56      c) 72      d) 98  
<sub>5^2 + 5</sub>      <sub>7^2 + 7</sub>      <sub>8^2 + 8</sub>      <sub>9^2 + 9 = 90</sub>.

- 3) a)  $\frac{4+9}{10+11}$  b)  $\frac{1+9}{2+3}$  c)  $\frac{9+10}{15+8}$  d)  $\frac{4+9}{6+4}$   
 4) a) KP b) BX c) ZA d) RI  
 5) a) BHD b) Cw# c) AAA d) BFC

Letter analogy and Number analogy! - (Analogy means similarity).

\* Letter analogy is also same as coding & decoding.

1) BFJ : CIN :: TPO : USS

2)  $\frac{2 \times 3}{6} : \frac{3 \times 4}{12} :: \frac{4 \times 5}{20} : \underline{\quad}$

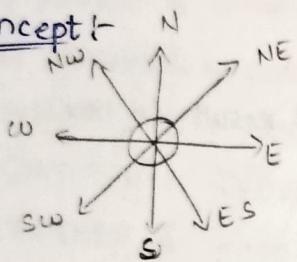
- a) 25 b) 39 c) 30 d) 32

3)  $\frac{11}{11} : \frac{121}{121} :: \frac{10}{\underline{10}} : \frac{10}{10}$

- a) 99 b) 90 c) 10 d) 105

### DIRECTION TEST (2M) → Accuracy.

concept :-

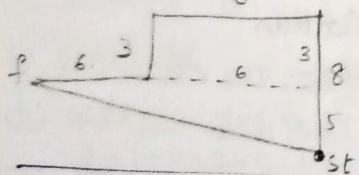


NOTE :- 1) 8 directions =  $360^\circ$ , 1 direction =  $\frac{360}{8} = 45^\circ$

Examples :-

Type-I:- [Find the dist b/w starting point & final point].

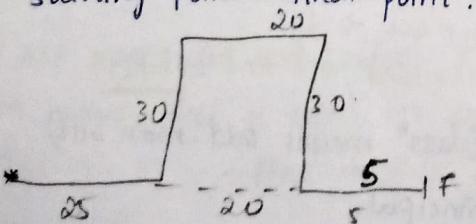
1) Ravi faces towards north, walks a distance 8m towards north. He turns left and walks 6m and then turns left and walks 3m. Finally he turns to the west and walks 6m to reach the final point. Find the dist b/w starting point & final point?



$$\begin{aligned} x^2 &= 12^2 + 5^2 \\ &= 144 + 25 = 169 \\ x &= 13 \end{aligned}$$

dist equal = st. line.  
not equal = right angle.

2) Starting from a point, Ravi walks a dist of 25m to his right. He turns left and walks 30m and then turns right and walks 20m. Once again he turns right and walks 30m. Finally he turns left and walks 5m to reach the final point. Find the distance b/w starting point & final point?

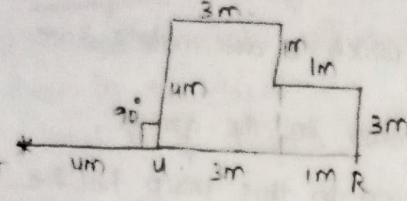


$$25 + 20 + 5 = 50.$$

3) Maya starts from point T walks straight to point U which is 4m away. She turns left at 90° and walks to W which is 4m away. Turns right at 90° walks to B which is 3m away. Once again she turns right at 90° walks to Q which is 1m away. She turns left at 90° walks to V which is 1m away. Finally she turns to the right at 90° and walks

to R which is 3m away. Find the dist b/w T & R?

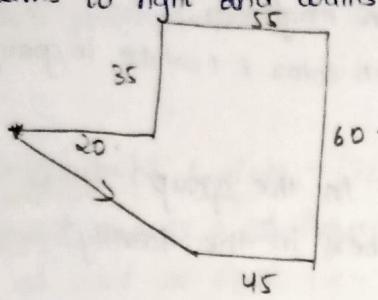
- a) 5m      b) 8m      c) 10m      d) 12m



either

Type-2: [Find the direction wrt starting point or final point]

- i) Starting from a point, Raju walks a dist of 20m to his right. He turns left and walks 35m and then turns right and walks 55m, once again he turns right & walks 60m. Finally he turns to right and walks 45m. Find the direction wrt starting point?



Ans: south-east

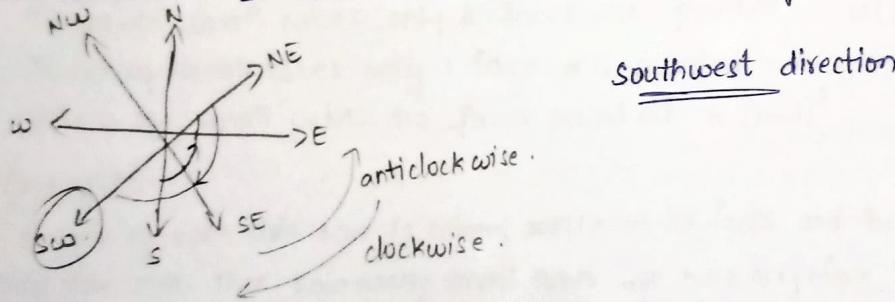
Type-3: [Find the angle direction wrt clockwise(rotational) & anti-rotational(irrotational)]

NOTE:- 1) one direction angle =  $45^\circ$

2) left  $\rightarrow$  right position = clockwise.

3) right  $\rightarrow$  left position = anti-clockwise.

- i) A man is facing south. He turns  $135^\circ$  in the irrotational(anti-clockwise) & then  $180^\circ$  in the rotational. In which direction was he moving finally?



PUZZLES

## Puzzle Test / Data arrangements / Analytical Reasoning: (SM)

## Family relation:-

\* Stmt - ① : P, Q, R, S, T & U are 6 members in a family in which 3 are male & 3 are female.

② There are 2 engineers, 2 lawyers, 1 teacher & 1 doctor in the group.

④: There are 2 engineers, 2 lawyers, 1 teacher.  
 ⑤: Q, T, P & R are two married couples and no person in this group has the same profession

④: T, a teacher with blue dress married a male lawyer with brown dress.

⑤: color of the dresses of both the husbands & that of wives are same.

⑥ P is a male engineer whose sister S is also an engineer.

⑦: Two blue dresses, Two brown color dresses, 1 green color & 1 white in group.

⑧: Q is a doctor.

i) which of the following is a pair of married ladies in the group? T & Q

2) which of the following is a group of female members in the family? **TQ5**

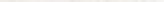
3) what is the color of 'U' dress? green or white.

4) what is the profession of R? lawyer.

5) which of the following stmt is not required to find the complete soln?

a) only 1      b) only 2      c) only 7      d) All stnts are required.

$\alpha \rightarrow$  doctor,  $\beta \rightarrow$  teacher,  $\gamma \rightarrow$  engineer,  $\delta \rightarrow$  lawyer

blue.  brown

## Cube, cuboid & dices

Ranking test :- (only Accenture, QM) right

i) If madhav ranks 12<sup>th</sup> from top & 13<sup>th</sup> from bottom in a class. How many students are there in the class?

$$\text{Total no. of students} = \frac{12+13-1}{2} \Rightarrow 24.$$

ii) If madhav rank 14<sup>th</sup> from top in a class of 31 students. Find his rank from bottom?

$$\text{Bottom rank} = 31 - 14 + 1 \Rightarrow 18.$$

iii) If A is 12<sup>th</sup> from left and B is 13<sup>th</sup> from right. If both A & B are interchanged their positions, now A is 21 from left. How many students are there in the class?

## Cube, cuboid & dices - (TCS & Gate)\*

Cube: i) Cube is a 3D figure i.e., x, y and z axis.

ii) All sides are equal i.e., length is equal to  $l = b = h$ .

iii) If length of a cube is 'x' cm then  $\boxed{\text{Volume} = x^3}$  and  $\boxed{\text{Surface area} = 6x^2}$

iv) Total 6 faces, 8 vertices, 12 edges.

v) If all the faces of a cube is x cm edge, are painted with a color and then cut into cubical blocks of each side 1cm, then

vi) Total No. of small cubes =  $x^3$

vii) No. of small cubes only 3 faces are painted = 8.

viii) No. of small cubes only 2 faces are painted =  $12(x-2)$

ix) No. of small cubes only 1 face is painted =  $6(x-2)^2$ .

x) No. of small cubes no faces painted =  $(x-2)^3$

### Examples:-

i) A cube of each side 4cm is colored white on all faces and then cut into cubical blocks of each side 1cm. Then how many small cubes will have only 1 face is painted?

$$\text{only 1 face is painted} = 6(x-2)^2 \Rightarrow 6(4-2)^2 \Rightarrow 6(4) = 24.$$

ii) A cube is painted white on all faces and then cut into 125 small cubes of equal size. How many small cubes will have no face is painted.

$$\text{Given, } x^3 = 125 \Rightarrow x = 5.$$

$$\text{No face is painted} = (5-2)^3 = 3^3 = 27. (x = 5)$$

iii) How many small cubes will have 2 faces are painted?

iv) How many small cubes will have 3 faces are painted?

$$\text{only not given then 2 faces are painted} = 12(x-2) + 8 \Rightarrow 12(3) + 8 \\ \Rightarrow 36 + 8 = 44.$$

3) A cube of each side 12cm has been painted red, white & blue on faces of opp faces then cut into cubical blocks of each side 2cm. Then.  $x = 6$

i) How many small cubes will have only one face is painted 'RED' and all other faces unpainted?  $\frac{6(x-2)^2}{3} \Rightarrow 2(x-2)^2 \Rightarrow 2(6-2)^2 \Rightarrow 2(16) = 32$ .  
No of colors  $\leftarrow 3$

ii) How many small cubes will have only 2 faces are painted RED & WHITE and all other faces unpainted?

$$\frac{4(x-2)}{3} \Rightarrow 4(x-2) \Rightarrow 4(6-2) \Rightarrow 16$$

(iii) How many small cubes will have only 3 faces are painted RED, WHITE & BLUE and other faces unpainted? 8

(iv) How many small cubes will have at least one face is WHITE color?

\* At least is minimum i.e., increasing order.  $\Rightarrow 2(x-2)^2 + 8(x-2) + 8 \Rightarrow x = 6$  then  
at least one face is WHITE = one face white + 2 face white + 3 face white 72

(v) How many small cubes will have if atmost one face is RED color?

NOTE:- Given 2cm = 12  $\Rightarrow$  1cm = 6  $\Rightarrow$  1x6

Atmost one face is RED = one face RED + NO face RED

$$= 2(x-2)^2 + (x-2)^3 \\ = 2(6-2)^2 + (6-2)^3 \Rightarrow 32 + 64 \Rightarrow 96.$$

Cuboid :- 1) Cuboid is also 3D figure i.e., x, y, z axis.

2) All sides are not equal but any 2 sides are equal.

3) Volume of a cuboid =  $l \times b \times h$ , surface area =  $2(lb + bh + hl)$

4) 6 faces, 12 edges & 8 vertices.

5) Let length = x, breadth = y & height = z then total No. of small cubes =  $x * y * z$ .

b) No. of small cubes only 3 faces are painted = 8.

c) No. of small cubes only 2 faces are painted =  $4[(x-2)+(y-2)+(z-2)]$

d) No. of small cubes only 1 face is painted =  $2[(x-2)(y-2)+(y-2)(z-2)+(z-2)(x-2)]$

e) No. face is painted =  $(x-2)(y-2)(z-2)$ .

NOTE:- This cuboid is also cut into cubical blocks of each side 1x1x1.

Example:-

1) There is a cuboid whose dimensions are  $10 \times 12 \times 14$ .

2) The opp faces of a dimension  $10 \times 12$  are colored red.

3) " the opp faces of another dimension  $12 \times 14$  are colored BLUE".

4) "The opp faces of a dimension  $10 \times 14$  are colored WHITE".

5) This cuboid is cut into cubical blocks of each side  $2 \times 2 \times 2$ .

Ques:-

- a) only 1 face painted.    b) only 2 faces painted    c) only 3 faces painted.

d) No face painted. e) How many small cubes are there in all?

$$x = \frac{10}{2} = 5, y = \frac{12}{2} = 6, z = \frac{14}{2} = 7$$

$$a) 2[(x-2)(y-2) + (y-2)(z-2) + (z-2)(x-2)]$$

$$\Rightarrow 2[(5-2)(6-2) + (6-2)(7-2) + (7-2)(5-2)] \Rightarrow 2[(3)(4) + (4)(5) + (5)(3)]$$

$$\Rightarrow 2[12+20+15] \Rightarrow 2[47] \Rightarrow \underline{\underline{94}}$$

## Data Sufficiency (2-3 m)

1) Q: Find  $y$ ?

stmt A:  $y^2 = 25$

$$B: y^2 + x^2 + 8 = 0$$

- a) If the ques can be answered with the help of Stmt A alone.
- b) If the ques can be answered with the help of Stmt B alone.
- c) If the ques can be answered with the help of Both the stmts A & B together.
- ~~d) If the ques can give the answer even with the help of both the stmts together.~~
- e) Each of the stmts alone. (either A alone or B alone).

ans: Stmt A  $\rightarrow y^2 = 25 \Rightarrow y = \pm 5$  i.e., ans is not unique. Therefore A alone is not sufficient.

Stmt B  $\rightarrow x$  &  $y$  term are not given. therefore B stmt also not sufficient.  
 $\therefore$  opt d is correct.

2) Find  $x$  &  $y$ ?

$$A: 2x + 6y = 7$$

$$B: 8x + 24y = 28$$

Opt-d is correct bcz both stmts A & B are same when we multiply Stmt A with 4.

3) Is  $p$  a prime no.?

A:  $5p$  is not a prime no.

B:  $\frac{p}{5}$  is a prime no.

Stmt A  $\rightarrow 5p = \text{composite no.}$  then  $p$  is equal to composite no  $\frac{5}{5}$

let composite no = 4 then  $p = \frac{4}{5}$  i.e., fraction.

let composite no = 10 then  $p = \frac{10}{5} = 2$ , i.e., prime no.

let composite no = 20 then  $p = \frac{20}{5} = 4$  i.e., composite no. i.e., different

composite no's different soln's are possible Stmt A not sufficient.

Stmt B  $\rightarrow \frac{p}{5}$  is prime no.  $\Rightarrow p = 5 \times \text{prime no.} = \text{composite no.}$

i.e., By using Stmt B  $p$  is not prime no.

$\therefore$  Ans is unique (B).

4) Is  $x^3 > x^2$ ?

A:  $x > 0$

B:  $x < 0$

Stmt A  $\rightarrow x > 0 \Rightarrow x = 0.1$  then  $x^3 < x^2$  }  $\therefore$  Multiple soln's are possible then

let  $x = 1$  then  $x^3 = x^2$

let  $x = 2$  then  $x^3 > x^2$

} A alone is not sufficient.

stmt B  $\rightarrow x < 0$  i.e. all are -ve. let  $x = -0.1$ , then  $x^3 < x^2$   
 let  $x = -1$  then  $x^3 < x^2$   
 let  $x = -2$  then  $x^3 < x^2$  }  $\therefore$  Answer is unique.

$\therefore$  opt B is correct.

4) Find the ~~above~~ Raju birthday date?

A: Raju birthday date is after February 26, 2024 but before 29 February, 2024.

B: 27 February, 2024 is Thursday.

stmt A  $\rightarrow$  Raju b'dy dates = 27, 28. } Neither A nor B.  
 stmt B  $\rightarrow$  27 is Thursday.

5) Find the present age of A?

A: 4 yrs back A's age was 5 times of B's age.

B: After 3 yrs A's age will be 4 times of B's age.

Opt C is correct.

6) Find the speed of a boat in still water?

A: The boat covers 48 km in 4 hrs. running downstream.

B: The boat covers same dist in 6 hrs while running upstream. } speed of boat in still water =  $\frac{a+b}{2}$

Opt C is correct, bcz.

$$\frac{12+8}{2} = 10.$$

$$b = \text{speed of upstream} = \frac{48}{6} = 8. \quad a = \text{speed of downstream} = \frac{48}{4} = 12.$$

7) Find the rate of interest per annum?

A: principle amt = 5000, T = 20.

B: If the diff b/w CI & SI on sum of ₹ 500 in 3 yrs. is ₹ 20.

Opt B is correct.

### Number Test:-

1) How many 5's are there in the following number sequence. Each of which is immediately preceded by 8 but not followed by 2?

9 8 6 4 8 5 2 0 4 5 8 3 7 9 1 8 5 6 0 9 4 3 2 5 8 9 4 1 0 6 8 5 7 2 3 4 5.

Ans is 2.